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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/205,094	12/03/1998	HIROYUKI OKADA	018656-045	8215
21839	7590	02/08/2005	EXAMINER	
BURNS DOANE SWECKER & MATHIS L L P			VILLECCO, JOHN M	
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ALEXANDRIA, VA 22313-1404			PAPER NUMBER	
			2612	

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/205,094

Applicant(s)

OKADA, HIROYUKI

Examiner

John M. Villecco

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-5, 10-13 and 17-20 is/are allowed.
- 6) ☒ Claim(s) 6, 7, 9, 14 and 15 is/are rejected.
- 7) ☒ Claim(s) 8 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see page 3, line 13 to page 8, line 18, filed July 29, 2004, with respect to independent claims 1, 4, 10, and 13, have been fully considered and are persuasive. The rejection of claims 1-5, 10-13, and 17-20 has been withdrawn.

2. As for independent claims 6 and 14, applicant argues that the combination of Nohda, Konishi, and Parulski fails to disclose the claimed invention. More specifically, the applicant argues that the combination fails to teach or reasonably suggest simultaneously storing data, which is generated by individual pixels, and information, which describes color associated with the individual pixels or which describes the arrangement of the individual pixels relative to different components (see page 12, lines 14-23 of applicants response).

The examiner disagrees with the applicant's assertion. Nohda clearly discloses sensing an image with an image sensor having an array of pixels, storing the image data, and transmitting the image data to a secondary site. Furthermore, Nohda does disclose interpolating the data at a second site in order to generate complete color data for the individual pixels and then reproducing the image in accordance with the color data. The phrase "complete color data" is extremely vague. It is interpreted by the examiner that the adaptive interpolation does interpolate the image data to generate complete color data. As disclosed in column 8, lines 54-67, the image data is interpolated to form a luminance signal Y that is then added to the R, G, B signal components. The examiner interprets this process as interpolating the data to generate complete color data.

Additionally, applicant argues that the combination of references fails to specifically disclose simultaneously storing information which describes the colors associated with the pixels in the array. The examiner agrees with the applicant's assertion that Konishi merely discloses storing the information about the arrangement of the color filter array when the recording medium is loaded into the camera body. Konishi does this since at the time of invention it was not well known in the art to allow a camera to change the filters of a camera after manufacture and thus, since the filter would never change, it was unnecessary to store the filter arrangement for each image. Parulski was used merely to show that it was well known in the art at the time of the applicant's invention to allow a camera system to change the filter arrangement of a camera after manufacture. Using the teachings of Parulski and Konishi, one of ordinary skill in the art at the time the invention was made would have found it obvious to store the filter arrangement of the filter at the time the image was captured since, contrary to Konishi, the filter arrangement used during the capture of an image can change from image to image.

3. For the reasons stated above, the rejections of claims 6-9 and 14-16 from the previous office action will be repeated.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. **Claims 6, 9, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nohda (U.S. Patent No. 6,295,087) in view of Konishi (U.S. Patent No. 4,574,319) and further in view of Parulski et al. (U.S. Patent No. 5,040,068).**

6. With regard to *claim 6*, Nohda discloses an image pickup apparatus having an interpolation function. More specifically, Nohda teaches a specific embodiment of his invention in which a camera first interpolates image data within the camera and then sends it to a computer where it is interpolated using a different process. The camera, which serves as a first site, includes an image pickup device (11, CCD), which inherently has color filters that perform color separation associated with it, an A/D converter (14), and a computer, which serves as the second site, that interpolates for missing pixels using an adaptive interpolation process which is different from the first process. Nohda discloses a PC interface (32, 34) and a bus (33) for outputting the image data to the external device. Nohda also discloses a monitor (50) for displaying the interpolated image data.

Nohda, however, fails to explicitly state simultaneously storing image data and filter information and then transmitting the data to the second site. Konishi, on the other hand, teaches that it is well known in the art to save information regarding the arrangement of the color filter array along with the image data. See column 4, line 57 to column 5, line 26. When the image is reproduced the data is used for compensation in image reproduction (col. 6, lines 10-12). By storing the additional information onto the recorder (9) the processing can be performed correctly depending on the type of filter being used. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to send filter data along with

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the image to the computer in Nohda so that proper processing can be carried out by the computer system (30B) and different color filters can be used.

Konishi, however, only discloses storing the filter data when the memory card is loaded. Parulski, on the other hand, discloses that it is well known in the art to use different color filters in the same camera. See column 4, lines 4-19. Konishi teaches saving the filter data as soon as the memory card is loaded. Konishi does this because he assumes that the filter will never be changed. The Konishi patent also teaches storing variable image data for each image simultaneously. See column 5, lines 10-63. Therefore, if different types of filters are used, it would have been obvious to one of ordinary skill in the art at the time the invention was made to store the filter data simultaneously with the captured image data depending upon the type of filter used to capturing the image so that processing can be performed according to the type of filter used. At the time of the Konishi invention it was not well known in the art to allow a camera to change the filters of a camera after manufacture and thus, since the filter would never change, it was unnecessary to store the filter arrangement for each image. Parulski was used merely to show that it was well known in the art at the time of the applicant's invention to allow a camera system to change the filter arrangement of a camera after manufacture. Using the teachings of Parulski and Konishi, one of ordinary skill in the art at the time the invention was made would have found it obvious to store the filter arrangement of the filter at the time the image was captured since, contrary to Konishi, the filter arrangement used during the capture of an image can change from image to image.

7. As for *claim 9*, Official Notice is taken as to the fact that it is well known in the art to compress image data before transferring it to an external site. Compressing an image conserves

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both memory and bandwidth when transmitting. Therefore, it would have been obvious to compress the image before transmitting the image so that memory is conserved and bandwidth is reduced.

8. *Claim 14* is considered substantively equivalent to claim 6. Please see the discussion of claim 6 above.

9. **Claims 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nohda (U.S. Patent No. 6,295,087) in view of Konishi (U.S. Patent No. 4,574,319) and further in view of Parulski et al. (U.S. Patent No. 5,040,068) and Rashkovskiy et al. (U.S. Patent No. 6,181,376).**

10. Regarding *claim 7*, as mentioned above in the discussion of claim 6, Nohda, Konishi, and Parulski, disclose all of the limitations of the parent claim. Nohda discloses that each of the pixels generates data relating to one of three colors. However, none of the aforementioned references discloses that the complete color data comprises a combination of all three colors for any individual pixel. Nohda discloses performing the interpolation in the computer using only the red and green color components. Rashkovskiy, on the other hand, teaches a system that operates to generate red, green and blue pixel data for each of the photosites. See column 4, line 62 to column 5, line 15. By allowing the system to interpolate for each of the colors, the final image is of higher quality. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to interpolate for each of the colors so that complete image data is obtained for each pixel, thereby forming a higher quality image.

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11. *Claim 15* is considered substantively equivalent to claim 7. Please see the discussion of claim 7 above.

Allowable Subject Matter

12. Claims 8 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter:

Regarding *claims 8 and 16*, the primary reason for indication of allowable subject matter is that the prior art fails to teach or reasonably suggest performing a first interpolation at a first site, in accordance with the information, to produce a first set of complete color data, transmitting the first set of complete color data to a second site, and reinterpolating the first set of complete color data at the second site in accordance with the stored information, using a different interpolation process, to produce a second set of complete color data.

14. **Claims 1-5, 10-13, and 17-20 are allowed.**

15. The following is an examiner's statement of reasons for allowance:

Regarding *claims 1, 4, 10, and 13*, the primary reason for allowance is that the prior art fails to teach or reasonably suggest a data processor for performing color separation on the digital image data into pixel data of different colors based on the filter alignment data, and interpolates for missing pixels for each color to produce a complete set of pixel data for each color using a first process, an output unit for outputting the complete pixel data for each color,

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along with the filter data, to an external device, wherein the external device interpolates for missing pixels for each color using a second process which is different from the first process.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John M. Villecco whose telephone number is (703) 305-1460. The examiner can normally be reached on Monday-Thursday.

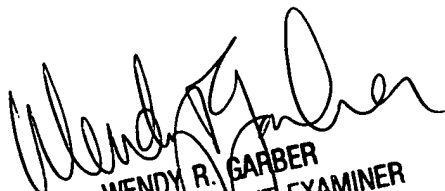
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John M. Villecco
January 28, 2005



WENDY R. GARBER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600